

OPIOIDS

TRENDS AND CURRENT STATUS IN MASSACHUSETTS

Fatal Overdoses, Hospital Discharges, Emergency Department Visits, & Trends in Treatment Services

Massachusetts Department of Public Health (MDPH)
Center for Health Information, Statistics, Research, and Evaluation, and the Bureau of Substance Abuse Services

May 2007

DATA HIGHLIGHTS

- Poisonings, the majority of which are drug overdoses, are the leading cause of injury death in Massachusetts, surpassing the number of motor vehicle injury deaths. The crude rate for poisoning deaths in MA increased 119% from 1990 (5.7 per 100,000) to 2005 (12.5 per 100,000).
- The proportion of the total poison deaths which were associated with an opioid increased from 28% in 1990 to 67.8% in 2005.
- From 1999 to 2005, the crude rate for opioid-related fatal overdoses increased 63.5% (from 5.2 to 8.5 per 100,000); crude rates for opioid-related hospitalizations increased 63.4% from 1999 to 2005 (162.6 to 265.7 per 100,000).
- Total charges for opioid-related hospitalizations including dependence, abuse, and/or overdoses exceeded \$197 million in FY2005.

WHAT ARE OPIOIDS?

The term “opioid” designates a class of drugs derived from opium or manufactured synthetically with a chemical structure similar to opium. Heroin is a naturally derived opioid. Other opioids such as oxycodone (OxyContin®), fentanyl, morphine, meperidine, methadone, and codeine, are used therapeutically for the management of pain and other conditions. These products may be diverted from pharmaceutical purposes and used illicitly.

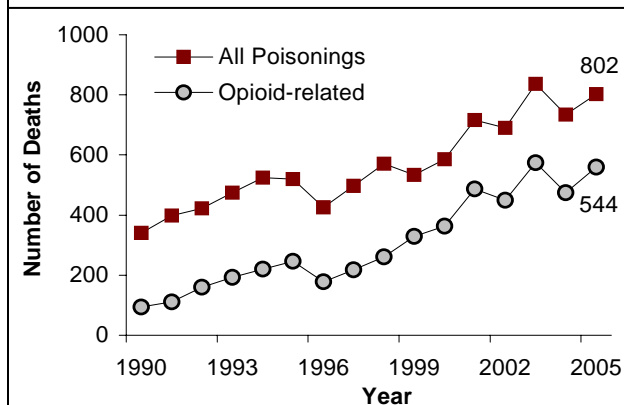
OPIOID-RELATED POISONING DEATHS (OVERDOSES)¹

MAGNITUDE

- Poisonings, which include drug overdoses, are the leading cause of injury death in Massachusetts accounting for 30.2% of all injury deaths in 2005 and surpassing the number of deaths from motor vehicle injuries. The crude rate for total poisoning deaths (from all agents combined) in MA increased 119% from 1990 to 2005 (5.7 to 12.5 per 100,000).

¹ A change in the coding of Massachusetts and national death data occurred in 1999 (from ICD-9 to ICD-10) and is represented on the graphic by a dotted line. The coding schemes may not be directly comparable across the two periods. Death data were therefore analyzed in two distinct periods. For additional information on data sources and methodology used in this bulletin please refer to Data Sources and Method Notes on page 7.

Figure 1. All Poisoning and Opioid-Related Poisoning Deaths, MA Residents, 1990-2005



Source: Registry of Vital Records and Statistics, MDPH.

OPIOID-RELATED POISONING DEATHS (OVERDOSES) *(continued)*

- The proportion of poisoning deaths which were associated with an opioid increased from 28% in 1990 to 67.8% in 2005.
- In 2005, deaths due to opioid-related overdoses (n=544) were over 5 times the number in 1990 (n=94).
- The crude rate for opioid-related poisoning deaths increased 156% (an average of 15% per year) between 1990 and 1998 (from 1.6 to 4.1 per 100,000), and 67.3% (an average of 10% per year) between 1999 and 2005 (from 5.2 to 8.5 per 100,000).

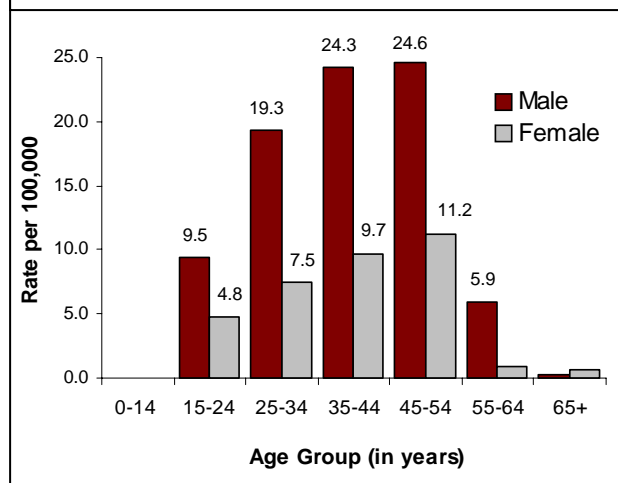
AGE GROUP AND SEX

- Between 1990 and 2005, rates for opioid-related deaths increased for both males and females and among all age groups.
- In 2005, age and sex-specific rates for opioid-related fatal overdoses were highest among males and females ages 35 to 54 (24.4 and 10.4 per 100,000 respectively). The combined rate for this age group was 17.3 per 100,000.
- For ages 15 to 64, opioid-related fatal overdoses were higher among males than females. In 2005, sex-specific rates for death due to an opioid-related overdose among males were 2.5 times higher than for females (12.2 and 4.9 per 100,000, respectively).
- Sex-specific rates for opioid-related overdose deaths among females increased an average of 17.4% per year between 1991² and 1998, and 10.3% per year between 1999 and 2005.
- Among males the sex-specific rate increased an average of 13% per year between 1990 and 1998, and an average of 9.8% per year between 1999 and 2005.

RACE/ETHNICITY

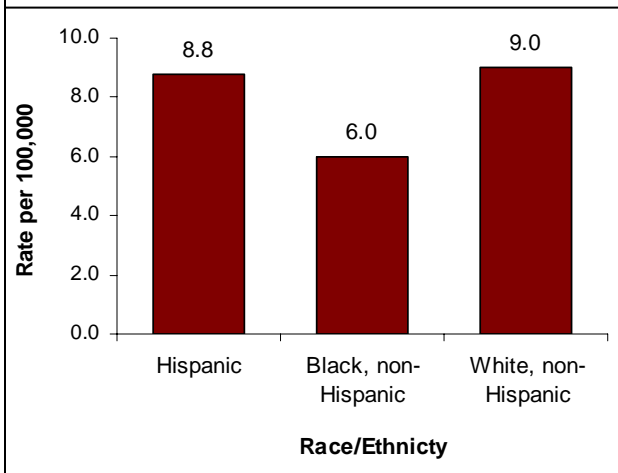
- In 2005, age-adjusted opioid-related fatal overdose rates were highest among White non-Hispanic (9.0 per 100,000, N=474) and Hispanic residents (8.8 per 100,000, N=44). Black, non-Hispanic residents had a rate of 6.0 per 100,000 (N=23). Other race/ethnicity including American

Figure 2. Age and Sex-specific Rates for Opioid-Related Poisoning Deaths, MA Residents, 2005



Source: Registry of Vital Records and Statistics, MDPH.

Figure 3. Age-Adjusted Opioid-Related Poisoning Death Rates by Race/Ethnicity, MA Residents, 2005



Source: Registry of Vital Records and Statistics, MDPH.

² Due to low number of cases among females in 1990 (N=14), percentage increase is reported for rates beginning in 1991.

Indian and Asian, non-Hispanic, accounted for 3 deaths.

- Age-specific rates were highest in the 35-44 year old age group among Hispanic residents and the 45-54 year old age group for White and Black non-Hispanic residents.

NON-FATAL OPIOID-RELATED INPATIENT HOSPITALIZATIONS³

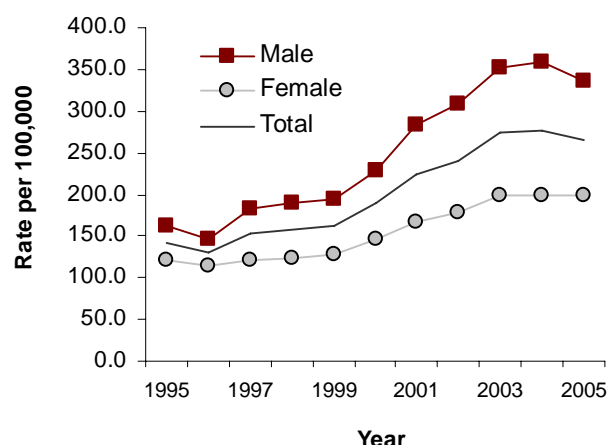
MAGNITUDE

- Crude rates for opioid-related inpatient hospital discharges have risen substantially since FY1996, increasing 63.4% from FY1999 to FY2005 (from 162.6 to 265.7 per 100,000).
- In FY2005, there were 17,104 opioid-related acute care inpatient hospital discharges among Massachusetts residents (265.7 per 100,000 residents).
- Total acute care inpatient hospital charges for hospitalizations associated with opioid dependence, abuse, and/or an overdose, exceeded \$197 million in FY2005*.
- From FY1999 to FY2005, sex-specific rates of opioid-related inpatient hospital discharges increased 72.6% among males (194.8 and 336.3 per 100,000) and 55.6% among females (128.1 and 199.3 per 100,000).

AGE GROUP AND SEX

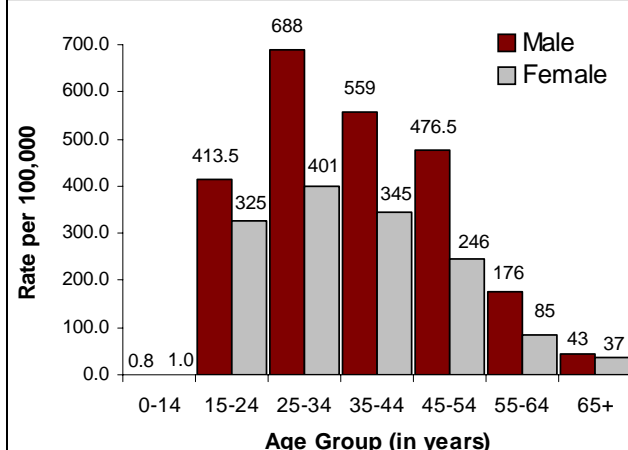
- From FY1999 to FY2005, the largest increases in age-specific rates for opioid-related inpatient hospital discharges were observed among individuals aged 55 to 64 years (44.4 to 128.4 per 100,000), and 65 years and older, (12.7 to 39.6 per 100,000), a 189.2% and 211.8% increase, respectively.
- In FY2005, age and sex-specific rates for opioid-related inpatient hospital discharges were higher for males than females for every age group age 15 and over. The largest disparity was among persons aged 55 to 64, with males having rates 2.1 times that of females (175.6 and 85.2 per 100,000 respectively).

Figure 4. Sex-specific Rates for Opioid-Related Inpatient Hospital Discharges, MA Residents, FY1995-2005



Source: MA Inpatient Hospital Discharge Database, MA Division of Health Care Finance and Policy.

Figure 5. Age and Sex-specific Rates for Opioid-Related Inpatient Hospital Discharges, MA Residents, FY2005



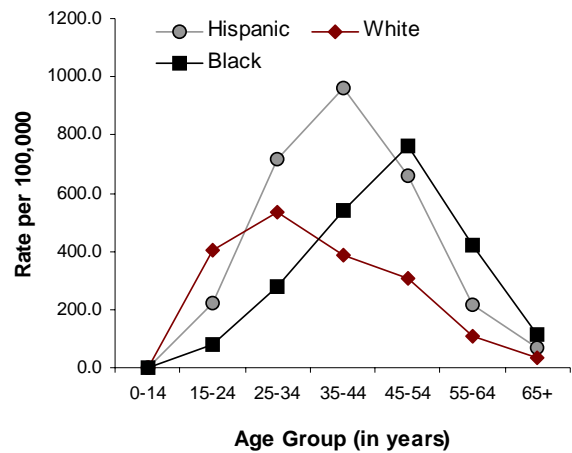
Source: MA Inpatient Hospital Discharge Database, MA Division of Health Care Finance and Policy.

³ Represents all acute-care hospitalizations where opioid abuse, dependence and/or poisoning was reported as one of the diagnoses at discharge. Data excludes hospitalizations at Veterans Affairs, psychiatric, rehabilitative, or long-term care facilities and deaths that occurred during hospitalization. Trends are reported from 1994 onward for data quality reasons (when external cause coding of injury cases was mandated).
*MA Hospital Discharge Database, MA Division of Health Care Finance and Policy.

RACE / ETHNICITY

- Age-specific rates varied substantially by race/ethnicity.
 - In FY2005, the highest rate among Whites was among 25-34 year olds (537.4 per 100,000).
 - For Hispanics, persons aged 35-44 year olds had the highest rate (962.4 per 100,000).
 - Among Blacks, the highest rate was among 45-54 year olds (760.5 per 100,000).

Figure 6. Age-specific Rates for Opioid-related Inpatient Hospital Discharges by Race/Ethnicity, MA Residents, FY2005



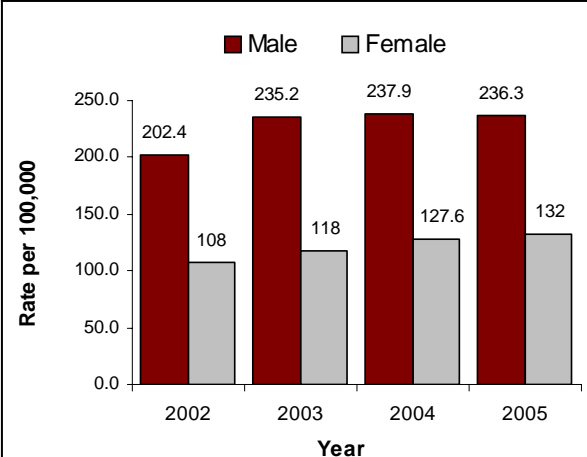
Source: MA Inpatient Hospital Discharge Database, MA Division of Health Care Finance and Policy.

NON-FATAL OPIOID-RELATED EMERGENCY DEPARTMENT VISITS⁴

MAGNITUDE

- Crude rates for opioid-related emergency department (ED) visits increased 18.6% from FY2002 to FY2005 (from 154.0 to 182.5 per 100,000).
- In FY2005, there were 11,750 opioid-related ED visits among Massachusetts residents (182.5 per 100,000 residents).
- Total acute care hospital ED charges associated with opioid dependence, abuse, and/or an overdose, exceeded \$14 million in FY2005.
- From FY2002 to FY2005, sex-specific rates for opioid-related ED visits increased 16.8% among males (202.4 and 236.3 per 100,000) and 21.4% among females (108.7 and 132.0 per 100,000).

Figure 7. Crude Rates for Opioid-related Emergency Department Visits by Sex, MA Residents, FY2002-2005

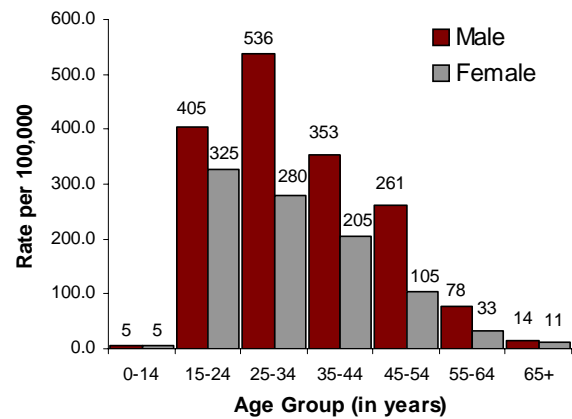


Source: MA Emergency Department Discharge Database, MA Division of Health Care Finance and Policy.

AGE GROUP AND SEX

- In FY2005, sex-specific rates for opioid-related ED visits among males was 1.8 times higher than for females (236.3 and 132.0 per 100,000, respectively).
- In FY2005, age and sex-specific rates for ED visits were higher for males of every age group over 14 than females. The largest disparity in rates between males and females were among persons aged 45 to 54, with males having rates 2.5 times that of females (260.9 and 105.1 per 100,000 respectively).
- The highest age and sex-specific rate for opioid-related ED visits among males was to persons aged 25 to 34 (536.2 per 100,000). For females, the highest rate was among persons aged 15 to 24 (325.4 per 100,000).

Figure 8. Age and Sex-specific Rates for Opioid-related ED Visits, MA Residents, FY2005

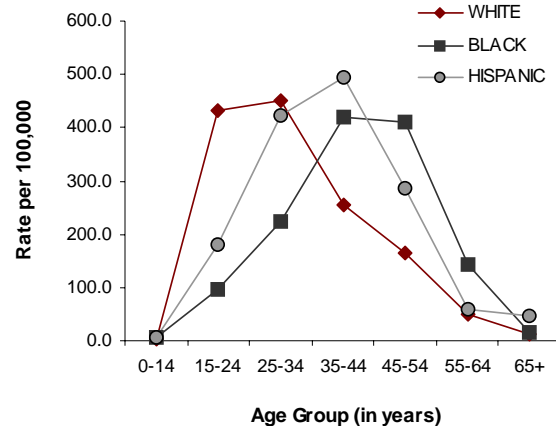


Source: MA Emergency Department Discharge Database, MA Division of Health Care Finance and Policy

RACE / ETHNICITY

- In FY2005, age-specific rates varied substantially by race/ethnicity:
 - The highest rates among Whites were to those aged 15-24 and 25-34 years old (431.7 and 451.0 per 100,000, respectively).
 - For Hispanics, the highest rates were among 25-34 and 35-44 year olds (422.1 and 493.3 per 100,000, respectively).
 - Among Blacks, the highest rates were among 35-44 and 45-54 year olds (419.8 and 410.2 per 100,000, respectively).

Figure 9. Age-specific Rates for Opioid-related ED Visits by Race/Ethnicity, MA Residents, FY2005



Source: MA Emergency Department Discharge Database, MA Division of Health Care Finance and Policy

BOSTON METROPOLITAN AREA EMERGENCY DEPARTMENT VISITS⁵

MAGNITUDE

- The estimated emergency department (ED) visits due to heroin use for the greater Boston area increased 40% from 1999 to 2002.
- For the greater Boston area, the estimated ED visits due to the use of narcotic analgesics and narcotic combinations, excluding heroin, increased 134% from 1999 to 2002.

TREATMENT AND PREVENTION⁶

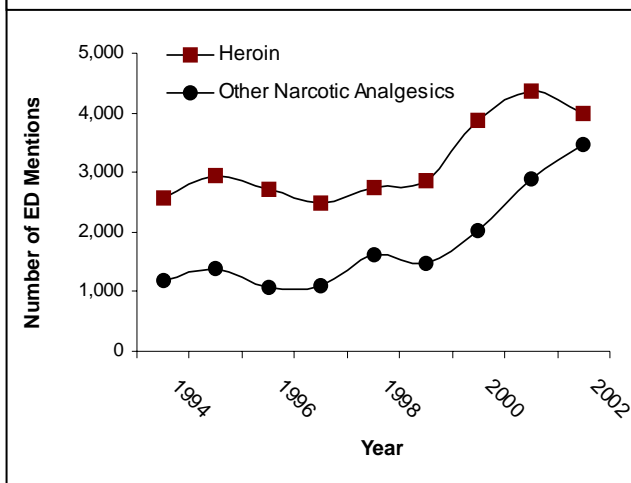
TREATMENT FOR ADULT HEROIN USERS

- In 2005, there were 43,450 admissions among Massachusetts adults (ages 18 and over) for publicly funded substance abuse treatment services who reported having used heroin in the year prior to admission.

PATIENT CHARACTERISTICS FOR ADULT HEROIN USERS, 2005

- 70.3% (n=30,551) of patients were male and 29.7% (n=12,899) were female.
- The mean age was 32.9 years.
- 71% of patients were white, 7.5% were black, and 18.1% were Latino.
- 71.9% of patients reported injection drug use during the past year.
- 89.9% were unemployed, 26.8% were homeless, and 27.2% had received prior mental health treatment.

Figure 10. ED Mentions for Heroin and Other Narcotics, Estimates for Greater Boston, 1994-2002*



Source: Drug Abuse Warning Network (DAWN), Substance Abuse and Mental Health Services Administration, USDHHS.

⁵ DAWN is a national public health surveillance system that monitors trends in drug abuse related emergency department visits. Estimates are derived from a sample of 22 hospitals located in the greater Boston Metropolitan Area which includes Essex, Middlesex, Norfolk, Plymouth, and Suffolk counties. Each drug for a reported case is called a "mention". One drug-related ED visit can have up to four specific substances listed. DAWN data are not collected in other areas of Massachusetts.

*Major changes to DAWN were instituted at the beginning of 2003. As a result, comparisons cannot be made between old DAWN (2002 and prior years) and the new DAWN. Regional data are not yet available for 2003 and beyond.

⁶ MA DPH Bureau of Substance Abuse Services Management Information System (SAMIS) includes data provided by all BSAS licensed substance abuse treatment programs. Data reflect admissions, not patients. Patients can have multiple admissions.

DATA SOURCES AND METHOD NOTES

Data Sources:

Deaths to Massachusetts Residents:

MA Registry of Vital Records and Statistics, MA Department of Public Health.

Statewide Acute-care Hospitalizations:

MA Inpatient Hospital Discharge Database, MA Division of Health Care Finance and Policy.

Data reported are for fiscal years (FY) October 1, 1995 – September 30, 2005. Deaths occurring during the hospital stay were excluded except when calculating charges. All hospitalizations and charges discussed refer to acute care hospitals.

Statewide Emergency Department Visits at Acute-care Hospitals:

MA Emergency Department Discharge Database, MA Division of Health Care Finance and Policy.

Data reported are for FY October 1, 2003 – September 30, 2005. Deaths occurring during the visit were excluded except when calculating charges.

Boston Metropolitan Area Emergency Department Visits:

Drug Abuse Warning Network (DAWN), Substance Abuse and Mental Health Services Administration. US Dept. of Health and Human Services.

Statewide Substance Abuse Treatment Data:

Bureau of Substance Abuse Services Management Information System (SAMIS), MA Department of Public Health.

Population Data: Population numbers used to calculate rates include estimates provided by the Massachusetts Institute for Social and Economic Research (1995-1998 data), DPH estimates for 1999, the U.S. 2000 Census file, and annual estimates provided by the U.S. Census Bureau (2001-2005 data).

Method Notes:

Opioid-related poisoning deaths (overdoses) were defined using the International Classification of Disease (ICD) codes for mortality; ICD-9 for 1995-1998 and ICD-10 for 1999-2005. The underlying cause field in the death file was used to ascertain a poison death (ICD-9 poison codes: E850-E858, E860-E869, E950-E952, E962, E980, E981, E982, and E972) and (ICD-10 poison codes: X40-X49, X60-X69, Y10-Y19, and Y85-X90). All multiple cause of death fields were then used to identify an opioid-related death (ICD-9 code 965.0 and ICD-10 codes: T40.0, T40.1, T40.2, T40.3, T40.4, and T40.6).

Opioid-related inpatient hospital discharges and emergency department visits, which include opioid abuse, dependence and/or poisoning, were defined using the International Classification of Disease Version 9 Clinical Modification (ICD-9-CM) codes for morbidity. All diagnostic fields were used to identify an opioid-related case (ICD-9-CM codes 965.0, 304.0, 304.7, and 305.5).

All rates are per 100,000 residents. Rates for age group and sex are age and sex-specific rates, rates for racial and ethnic groups are age-adjusted, all other rates are crude.

Percent change in rates was calculated using the formula:

$$\frac{N_{\text{final}} - N_{\text{initial}}}{N_{\text{initial}}} \times 100 = \% \text{ change}$$

For death data, the annual percent change from 1990 through 1998 was obtained by calculating the percent of change from year to year beginning with 1990 to 1991 (for males) and 1991 to 1992 (for females) and ending with the percent change from 1997 to 1998. The annual percent change was summed and averaged to ascertain the average annual percentage change for this time period. The same formula was used to calculate the annual percent change from 1999 through 2005 beginning with 1999 to 2000 for both males and females.

RESOURCES

Massachusetts Department of Public Health
Bureau of Substance Abuse Services
250 Washington Street, 3rd Floor
Boston MA, 02108
Tel. (617) 624-5111
Fax (617) 624-5185
TTY (617) 536-5186
www.mass.gov/dph/bsas/BSAS.htm

Massachusetts Department of Public Health
Center for Health Information, Statistics, Research & Evaluation
Injury Surveillance Program
250 Washington Street, 6th Floor
Boston MA, 02108
Tel. (617) 624-5648
Fax (617) 624-5099
www.mass.gov/dph/bhsre/isp/isp.htm

Regional Center for Poison Control and Prevention
Serving Massachusetts and Rhode Island
Children's Hospital Boston
300 Longwood Avenue, IC Smith Building
Boston, MA 02115
Tel. (617) 355-6609
Fax (617) 730-0521
Rhode Island Educator: (401) 222-3425
In an **Emergency**, call **1-800-222-1222**
www.maripoisoncenter.com

Massachusetts Department of Public Health
Center for Community Health
Injury Prevention and Control Program
250 Washington Street, 6th Floor
Boston MA, 02108
Tel. (617) 624-5413
Fax (617) 624-5075
TTY (617) 624-5992
www.mass.gov/dph/fch/injury/index.htm

Substance Abuse and Mental Health
Services Administration
www.samhsa.gov
Center for Substance Abuse Prevention
Tel. (301) 443-0365
www.samhsa.gov/centers/csap/csap.html
Center for Substance Abuse Treatment
Tel. (301) 443-5700

National Clearinghouse for Alcohol and Drug
Information (NCADI)
Tel. 1-800-729-6686

Massachusetts Community Health Information
Profile (MassCHIP)
<http://masschip.state.ma.us/>
Tel. 1-888-MAS-CHIP
(in Massachusetts)

FOR INFORMATION ON SUBSTANCE TREATMENT AND SERVICES:

Contact the Department's
Bureau of Substance Abuse Services on-line at

<http://www.mass.gov/dph/bsas/bsas.htm>

OR

Call the

MA Substance Abuse Information and Education

**HELPLINE @
1-800-327-5050**

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